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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,973	04/03/2001	Kenichiro Mori	684.3170	9679

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EXAMINER

ESPLIN, DAVID B

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,973

Applicant(s)

MORI, KENICHIRO

Examiner

D. Ben Esplin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-36 is/are rejected.
- 7) ☒ Claim(s) 32,33,35 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of previously objected to claims 6 and 9 is withdrawn in view of the newly discovered reference(s) to FIG. 20 of U.S. Patent No. 6,211,944 to Shiraishi and U.S. Patent No. 6,285,443 to Wangler. Rejections based on the newly cited reference(s) follow.

Drawings

The Examiner asserts that the previously made objection was proper since the diffractive optical element and the internal reflection member are not shown in FIG. 7 as being adjacent. However, since this limitation of the proximity of these two elements does not appear in the claims, as they are constituted at present, the objection to the drawings is withdrawn.

Specification

The substitute specification filed 3/17/03 has been accepted.

Claim Objections

Claims 32, 33, 35, and 36 are objected to because of the following informalities: These claims all refer to "the diffractive optical element" without a proper antecedent basis. For examination purposes, it has been assumed that a diffractive optical element as described in claim 18 is being described. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18-22, 24, 25, 29, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,211,544 to Shiraishi.

FIG. 20 of Shiraishi shows an illumination optical system including a diffractive optical element (diffraction grating 12), an angular distribution transforming unit (lens system 71), a multiple beam producing unit (fly-eye lens 72), a light projecting element (condenser lens 75), and a blocking member (spatial filter 16). The blocking member is shown as adjacent to a light exit surface of the multiple beam producing unit. Further, Shiraishi describes the location of the diffractive optical element as being at the Fourier transform plane of the multiple beam producing unit (col. 28 lines 54-58). Also disclosed, is the used of an adjustable optical element (lens system 73) disposed between the diffractive optical element and the multiple beam producing unit (col. 30 lines 29-32). Still further Shiraishi discloses that both the diffractive optical element and the blocking member are demountable (col. 6 lines 8-9 and 66-67).

Claims 26, 27, 31, 32, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,285,443 to Wangler et al.

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FIG. 1 of Wangler shows an illumination optical system including a diffractive optical element (diffractive element 8) and an angular distribution transforming unit (objective 2) including an optical element (zoom objective) shown in the drawing as being movable along the optical axis. Wangler further shows an internal reflection member (glass rod 5) for integrating light prior to it being incident on a surface to be illuminated (front surface of lens group 61).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi as applied to claims 18-22, 24, 25, and 29 above, and further in view of U.S. Patent No. 4,918,583 to Kudo et al.

Although Shiraishi does not teach the use of an internal reflection member in an illumination optical system, Kudo '583 shows that the use of an internal reflection member (internal reflection type integrator 10 of FIG. 1) in an illumination optical system was well known in the art. Therefore, it would have been obvious to dispose an internal reflection member in the illumination optical system of Shiraishi, adjacent to the light source, in order to uniformize the exposure light prior to further processing (col. 4 lines 32-38 of Kudo).

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Claims 28, 33, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi as applied to claims 18-22, 24, 25, and 29 above, and further in view of U.S. Patent No. 5,659,429 to Kudo.

Shiraishi is silent concerning the angular distribution transforming unit including a plurality of optical elements that are demountably inserted into the optical path. However, FIG. 10A of Kudo '429 shows an illumination optical system including a plurality of optical elements (lenses 3a and 3b) that are placed in the optical path in order to suit adjustable downstream light processing (turret plate 51)(col. 9 lines 31-36). Since the illumination optical system of Shiraishi also includes adjustable downstream light processing (interchangeable diffractive optical unit and blocking member), it would have been obvious to include a plurality of interchangeable optical elements in the angular distribution transforming unit of Shiraishi, in order to better adapt to light processing adjustments made downstream of the angular distribution transforming unit.

Response to Arguments

Applicant's arguments with respect to claims 18-36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


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U.S. Patent No. 5,675,401 to Wangler et al. discloses an illumination optical system including an angular distribution transforming unit including optical elements moveable along the optical axis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Ben Esplin whose telephone number is (703) 305-4022. The examiner can normally be reached on Mon.-Fri. (8am-4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell E. Adams can be reached on (703) 308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


DBE
April 2, 2003


RUSSELL ADAMS
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